

*MASTER
NEGATIVE
NO. 93-81223-14*

MICROFILMED 1993

COLUMBIA UNIVERSITY LIBRARIES/NEW YORK

as part of the
"Foundations of Western Civilization Preservation Project"

Funded by the
NATIONAL ENDOWMENT FOR THE HUMANITIES

Reproductions may not be made without permission from
Columbia University Library

COPYRIGHT STATEMENT

The copyright law of the United States - Title 17, United States Code - concerns the making of photocopies or other reproductions of copyrighted material.

Under certain conditions specified in the law, libraries and archives are authorized to furnish a photocopy or other reproduction. One of these specified conditions is that the photocopy or other reproduction is not to be "used for any purpose other than private study, scholarship, or research." If a user makes a request for, or later uses, a photocopy or reproduction for purposes in excess of "fair use," that user may be liable for copyright infringement.

This institution reserves the right to refuse to accept a copy order if, in its judgement, fulfillment of the order would involve violation of the copyright law.

AUTHOR:

GREENWALT, MRS. MARY
ELIZABETH HALLOCK-

TITLE:

TIME ETERNAL

PLACE:

[PHILADELPHIA?]

DATE:

[190-?]

Master Negative #

93-81223-14

COLUMBIA UNIVERSITY LIBRARIES
PRESERVATION DEPARTMENT

BIBLIOGRAPHIC MICROFORM TARGET

Original Material as Filmed - Existing Bibliographic Record

108

Z3

v.2

Greenewalt, Mrs. Mary Elizabeth Hallock-, 1871-
Time eternal, by Mary Hallock-Greenewalt... lec-
ture delivered under the auspices of the Public li-
braries of Philadelphia. [Philadelphia?] 190-?,
cover-title, .9 p. 23 $\frac{1}{2}$ cm.

Half-title.

Restrictions on Use:

TECHNICAL MICROFORM DATA

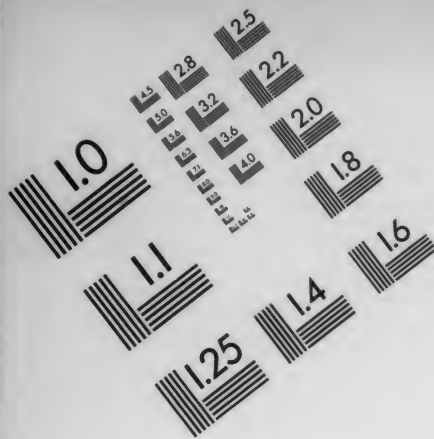
FILM SIZE: 35 mm

REDUCTION RATIO: 11x

IMAGE PLACEMENT: IA (IIA) IB IIB

DATE FILMED: 3/20/93 INITIALS BAP

FILMED BY: RESEARCH PUBLICATIONS, INC WOODBRIDGE, CT

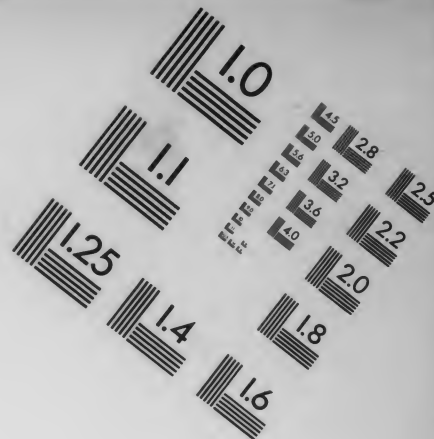


AIIM

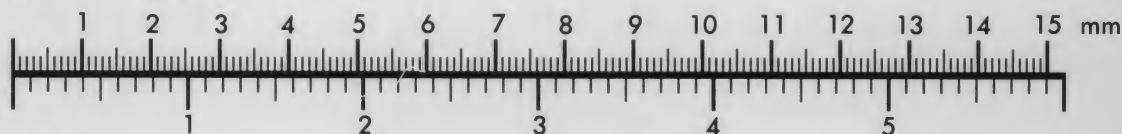
Association for Information and Image Management

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910

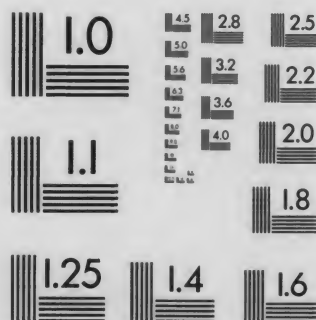
301/587-8202



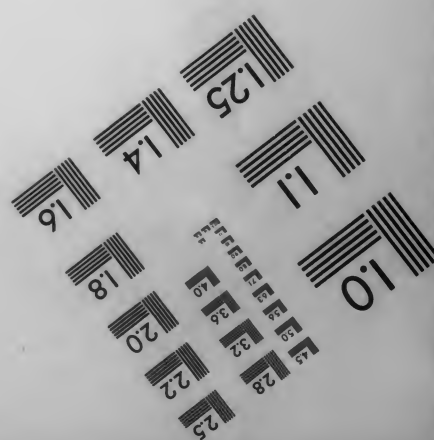
Centimeter



Inches



MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.



700

No 9

TIME ETERNAL.

BY MARY HALLOCK-GREENEWALT,

1424 MASTER STREET,
PHILADELPHIA, PENNA.

LECTURE delivered under the auspices of the PUBLIC LIBRARIES
of Philadelphia.

*TIME ETERNAL

BY MARY HALLOCK-GREENEWALT

There was once a man who said to himself, "When I travel from the Atlantic to the Pacific on the railroad train I gain three hours; when I go all the way around the world I gain a day; now supposing I travel all the time! I'd never die, because, of course, I would never be quite as many days old as I would have been had I not kept moving."

This man, so the newspaper said, went crazy thinking over the problem. I hope such a fate may be spared us.

Perhaps all of us have at some time or other speculated on this subject of time. How strange this thing which never had a beginning and will never have an end! How truly bewildering such eternity! This little peculiarity, that of wondering about this phenomenon, we have shared with the greatest thinkers of all ages.

Before engaging in the particular problem of our subject let us rehearse briefly the opinions of some of these various men:

Aristotle, in the 4th century before Christ, defined time as the "measure of motion with reference to the earlier and later." So far as this goes it must be approved. Time as we think it is inseparable from motion because it is being acted away. If all things were stationary and immovable there would be no earlier or later.

Then came the Stoics, about 308 B.C., who defined time as the extension of the motion of the world, which they said was infinite both in the direction of the past and of the future. This we can

* This paper, delivered as a lecture for the Public Libraries of Philadelphia, gives a physiologic reason for our thinking of Time as a one-dimensional phenomenon.

The argument grew out of two brochures, "Pulse and Rhythm", appearing in the Popular Science Monthly, 1903, and "Pulse in Verbal Rhythm", Poet Lore for the Summer of 1905. These papers are more or less essential to the sequence of this reasoning.

Extended concert tours as pianist have delayed the volume in which the myriad-sided notes and facts could be exhaustively set forth.

hardly accept, because the motion of the world has nothing to do with our time, as is shown by the story with which our subject began. Had that man travelled all the time, had he gone around the world instantaneously, around and around in a pneumatic tube, he would have been just as old as if he had remained sitting at his home. His age is inseparable from himself, is intimately connected with himself. We have used the turning of the world as a measure, but the measure has nothing to do with the age. Our time is quite separate from that of all inorganic things about us, except in so far as these inorganic things keep up the mechanism of the body.

The "world" enters into the subject in a different way when Plato, in the 5th century B.C., and Thomas Aquinas, in the 15th century after Christ, held that time began with the world. "This," the latter said, "had not existed from eternity, but had been called into existence out of nothing by God's almighty power at a determinate instant in time, with which instant time began."

Plato realized evidently that matter developed into form only could realize a motion which could be gauged. You will understand what I mean if you can imagine the world a mass of moving molecules, something as little particles of matter show up in a ray of light,—some flying hither, some thither, every which way with apparently no "rhyme or reason". Unless they make a definite pattern, like electric fountain or kaleidoscope, which they may without our knowing it, there would be nothing regular enough by which the before and after could be reckoned.

After Plato came a man who said that time must have had a beginning or it would never have reached the present moment. As though time were some sort of a rod or, better yet, jointed fishing pole, which, by dint of a new joint being constantly added, eventually reached from the beginning to us.

About the 5th century began the feeling that the soul, the spirit, that which possibly has nothing to do with our bodies, could not be part of space, and a philosopher by the name of Cladius Manertus thought that the soul "was subject to motion in time though not to motion in space."

Then came the truest note found in the philosophy of the Jews in the middle ages, which raised Jehovah above the individual and exalted him ABOVE TIME AND SPACE.

After the 15th century the truth was formulated that we never

can think of anything except it be connected with either time or space, and in the 17th century Leibnitz said simply that "space is the order of co-existing phenomena, while time is the order of succession of phenomena." And then came Kant.

I have in the world of letters two great overweening admirations. One of them is Darwin, the other is Kant. To say that I would have been willing to wash their feet and dry them with my hair is too trifling. To say that I would have been willing to sacrifice my life rather than that they should not have lived is, so far as I can tell, without being brought face to face with the proposition, nearer the feeling. It is not quite so much what Kant did as the way he did it which makes the mouth gape and the eyes open wide. His conclusions were reached through as subtle and abstruse reasoning as may be possible to any human mind. And yet, we are going to try to explain from a strictly material, physical standpoint that which this extremely great man seized so gloriously, through things which we cannot see, which we cannot feel, which we can only think.

Kant's idea was that time is "our particular way of looking at things." That our sort of time at least does not exist in a chair or table, or the air, or the earth. That we see all things in a medium of time because it is a peculiarity of the brain to do so. His difficulties regarding the subject are our difficulties. His questioning arose out of the impossibility of conceiving of time as either having bounds or as having none absolutely.

After Kant came Herder, who said that what was needed was "a Physiology of the Human Faculties of Knowledge;" then Herbert, who, born in 1776, held "that space and time are the results of the psychical mechanism;" and then Trendelenburg, whose idea was that time and space are products of the "motion" which takes place within and without us as well.

Here our work begins. We accept the suggestions of these last three men, but we are going to dare to specify. We are not going to be content with saying that physiology in general is at the root of our sense of time, we are going to say what part of physiology it is. We are not going to be satisfied with saying that the motion within has given us a sense of time, we are going to say what motion.

I feel particularly emboldened to do this because it seems to me the testimony* already offered by music has a vital bearing on the subject.

* N. B. See Popular Science Monthly for Sept. 1903, Pulse and Rhythm.

A character in Mr. James Huneker's *Melomaniacs* (the word means music-maniacs) thought that through music he could find the fourth dimension. I am hopeful enough to think that music may prove the means through which we may have been led to know more about eternity. And why not? Is not time the very vertebra of the art?

The first step is to define time. Most of the dictionary definitions are not such. When, for example, the *Standard Dictionary* says, Time is a definite period of duration, we are practically saying that Time is Time. Let me coin a definition for you: Time is periodic motion recording change within the organism, and thought of by it as extending forward in one dimension only.

No one will quarrel with the fact that time is inseparable from change. That that change must record within us we have seen from the little story of the man who thought that by travelling around the world he could beat time. Let me repeat that we are considering time only in the form in which it appears to us. Dwellers in Mars may for all we know have a totally different idea of time from us, "a sort of time" which, in Prof. Royce's words, "may include the truth of ours and still make clear how the world process somehow returns into itself." A sort of time, in other words, which would make it unnecessary for us as well as Kant to have to conceive time as being in a straight line and yet having no beginning and no end. Or a thing which no matter how much it is subdivided will still have a piece left.

Change of course implies motion. Why should this motion be periodic? Because we would never have had the capacity of measuring time regularly if something did not accent the recurrence. You have but to conceive the world revolving in a space empty of sun, moon and stars or any recurrent motion to realize how impossible it would have been for us under the circumstances to gauge day and night. Something must accent the recurrence; must make the recurring landmark. It is through the jolt that the presence is made conscious.

There remains the fact that time is one-dimensional, and of that the psychological laboratories approve. We think of things as having happened back of us or to happen before us.

Now all that we have seen or felt or tasted or smelt in our past lives, gets shut up within us into a little box which we call the brain

or brain and nervous organism. This brain is like a composite picture made on a sensitive film. It gets one impression after another one moment after another, but the moment a new picture is added it becomes part of the old picture, one with it, *needing no time for its seeing* even if time was used in its making. We see our lives, any short instant we choose to look at them, just as they are said to appear before a man about to drown. It may have taken years to make the picture, the clock may have ticked away myriads of seconds during the performance, but any time you can look back and see the thing at one glance. The time which it took to make the picture is not necessary for the re-seeing of it.

I hear Mr. Paderewski play a whole Recital programme, and afterward the whole is before me as in one glance; to hear it I do not have to say he played this in the first bar and this in the second. It does not take me two hours every time I think that recital over.

Evidently the real US within the brain does not know or need time. It is, and that is all we can say of it.

Camille Flammarion, the great French astronomer, relates this anecdote in his book, "The Unknown." He says: Madame d'Esperance, whose faculties as a medium were extraordinary, says of one of her impressions, "How can I describe the indescribable? Time had disappeared. Space was no more. I felt that thoughts were the only really tangible things".

Notice this very particularly, that whereas time was present during the manufacturing of the impressions of our brain, it is not inextricably part of the impressions, is not bound up in the impression.

Please, for my sake, keep the motion of the world around the sun quite out of your head, remembering the man who would travel, and think what can record the happenings which make up the furniture of the brain by periodic motion which records inward change and which is not itself part and parcel of the brain's inward happenings.

Once upon a day Galileo, then a student at Pisa, while sitting in a church took to watching the chandelier. It swung first through a greater arc and then through a smaller. He thought the same length of time was taken for all the excursions. He verified the fact by the only small regular one-dimensional time measure at his command. He verified the fact by feeling his pulse. That one discovery made all the clocks and watches possible. They are based

on the principle of the pendulum swinging in the same time no matter what the arc through which it travels.

Let us see what the mechanical effect is of the recurrent surge of new life blood on the brain. Dr. Holmes says, "The forcible impact of the four columns of arterial blood raises the brain in normal condition just as it is seen to raise it through an accidental opening in the skull."

Regular motion has, therefore, accompanied every single thought that has ever been from the insect stage or before, evolutionary speaking, to our stage.

Is it any wonder then that, to use Kant's words paraphrased, "There is therefore no part of our experience free from the condition of time." Before the brain formed, periodic motion swinging in one direction was waiting for it. In a bodily form no thought has ever been which did not have regular recurrence as a part of its experience.

It is this idea which in the twinkling of an eye changed an abstruse and unintelligible book into one more or less easy of comprehension to me, led to the solution as I was by the metronome marks of musical composition, the time rate of verbal utterance and muscular exercise, the unit underlying the measure of the clock. Needless to say this book is that part of Kant's Critique of Pure Reason dealing with time.

How impossible to imagine time as non-existent; how different the problem looks when you can see a reason for not being able to think of anything as apart from a one-dimensional time, no matter what three, four or *n*. dimensional impressions may underlie it.

This regular motion has affected the brain as a whole. It is this which differentiates the question.

When an electric current is sent through the entire body, you can feel the influences permeating into the tissues. These do not move any one organ as a whole. So it must be with heat, light, sound and all the list of small rhythms which record in the very being of the brain.

Time makes a part of the brain as a whole. Periodic motion has recorded every change in the brain, but has not been an innate part of it.

You pick up a newspaper and in one instant catch a glimpse of several headings. One of them may be about Port Arthur in

Manchuria, another a murder in your own city, a third an Antarctic expedition. In that one instant these are all focused into one single unit of your time, the unit of time in which you happened to see them. While glancing at the paper you may have been tapping with your foot or fingers, you were aware of what sort of a day it was, its atmosphere, etc. Your nose may have been smelling the bunch of violets at the lady's corsage next to you, you might possibly have been smoking: every one of these impressions would have gone into the same instant. Clearly one-dimensional time is a matter of the whole brain, and never belongs to some part of it to the exclusion of the other part. Periodic motion has accompanied every change in the brain, but has not been intimate part of it. The whole of the brain has been made through the circulation of the blood to move regularly. Internally the brain has been fed, not by this force, but by capillary attraction. Here we have the phenomena of regular motion being an accompaniment of every thought without its being part and parcel of that thought. Remember that I am talking of the *way we think* of time. The worlds with their suns may swing in a motion which is periodic, which has a before and an after, but which does not progress in one direction. That is not our time. A being in Mars may have three heads to the right and to the left and up above and so see happenings as being periodic, recording inward change but progressing in three directions; that would not be our time. We are talking now of our way of looking at time and nothing else.

In talking this problem over with a psychologist, he said: "You would have to show then that a sense of time is with us when we sleep." So far as that goes, there is plenty of evidence that such is the case. People have been known to be able to wake up at a certain time. They have been known to gauge the time accurately when they wake up during the night. On the other hand, when people faint the heart action gets so weak that I have been told it was sometimes almost impossible to feel any pulse at the wrist. During a fainting spell the sense of time is more or less lost.

There are apparently remote and yet similar matters which add proof to our idea. When we have fever the pulse is much accelerated and the day seems to pass by more slowly. The inward moments are being ticked off quicker and therefore the day seems longer. Under the excitement of expectancy the same results pre-

vail. "A watched pot never boils." Similarly children, whose pulse rates are faster, find the uninteresting hours at church move most tortoise-like.

"But, granted all this," you will say, "how do you explain the fact that we think of time as progressing in an unending line forward into space?"

I explain it on this ground, that addition always means extension to us. If I have an apple and add another to it the two take up more room, project further into space, than the one; any addition means this. I hold that through the custom of the brain to think of extension when there is addition in finding one sensation added to another, one motion (one-dimensional) added to another, it thinks extension whether there is extension or not. It is a fallacy of the brain.

It is more than possible that we have conceived of time as conveying us toward heaven in a direction opposite to our feet because the brain's pulsing has been in that direction. The kingdom of heaven may be within us after all.

Here we have compassed with a simple explanation our definition of time. We have seen that there is a phenomenon of our physical selves which can explain why it is that we can conceive of nothing except as occurring under our way of thinking of time. It is because our every thought, the every thought of our parents and grand-parents and their grand-parents back to the insect family or before, have always had their birth under circumstances of periodic motion, recording inward change and thought of by us as progressing forward into space.

But, you will say, what about the before and after, the earlier and later. We are living now and we die afterwards. Let us imagine ourselves dead; after what has been said can we, with the heart stilled, the arteries in motionless ebb, think that what is left of us lives in the time which the bodily mechanism gave us? Remember what it is like when one faints. And our idea of time, the idea we had before we began this thinking—did we not think of it as leading us to a place far away from this?

Why need our spirits go anywhere if they need no room? As to our bodies, do they not come right back again to what they were before, dust to dust?—Cæsar turned into nourishment for a flower;

"Alexander's disintegrated body helping to make the mortar for a wall."

Alternation outside of us does not bring a sense of forwardness into space. Here is the point as it strikes me in the whole subject. It must be thoroughly understood what are the characteristic ways in which the before and after appear to us and what it is like in inorganic nature. Our bodies grow; they disintegrate, turn into other bodies which in their turn disintegrate, form other bodies and so on in an endless chain. A tree grows. It is made into a chair, the chair is burned up, the gases get into the air, new trees are fed, new chairs made, etc. This is the theory of conservation of energy, thoroughly worked out by some half-dozen men of the past century. All this would be simply change which brought things back to the same place again;—a kaleidoscope; various images of the same things.

Supposing we imagine that primitive man learned time from his surroundings. There would be the sun rising and setting, rising and setting, and the change in the verdure. But we have seen, I think, that if the sun did not record change in his inward experience, there would be nothing but alternation, which would imply neither change nor progress in one direction. It would be the same as if a platter, the same platter, was turned once toward you and then away from you.

As to the verdure, there is no change in the tropical regions. Man did not leave the tropics till very late in his development. But even were this not so, look at a landscape. How peaceful and eternal, immobile and unchanging everything looks. How quiet the internal change in the verdure. How irregular the breeze. Could the sense of throbbing, pulsing time with its eternal upward and forward motion have come from this? I think not.

It may be that in our *finite* condition through some such sort of reasoning, clarifying and eliminating of facts we must begin to see the infinite. "Yea, though worms destroy this body, yet in my flesh shall I see God."

MARY HALLOCK-GREENEWALT.

